



Source Water Assessment Program (SWAP) Report for Pine Valley Plantation

What is SWAP?

The Source Water Assessment Program (SWAP), established under the federal Safe Drinking Water Act, requires every state to:

- inventory land uses within the recharge areas of all public water supply sources;
- assess the susceptibility of drinking water sources to contamination from these land uses; and
- publicize the results to provide support for improved protection.

SWAP and Water Quality

Susceptibility of a drinking water source does *not* imply poor water quality. Actual water quality is best reflected by the results of regular water tests.

Water suppliers protect drinking water by monitoring for more than 100 chemicals, treating water supplies, and using source protection measures to ensure that safe water is delivered to the tap.

Prepared by the
Massachusetts Department of
Environmental Protection,
Bureau of Resource Protection,
Drinking Water Program

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September 24, 2001

Table 1: Public Water System (PWS) Information

<i>PWS Name</i>	Pine Valley Plantation
<i>PWS Address</i>	281 Chauncey Walker Street, State Route 21
<i>City/Town</i>	Belchertown, Massachusetts
<i>PWS ID Number</i>	1024002
<i>Local Contact</i>	Mr. Paul Cook
<i>Phone Number</i>	413-323-7206

<i>Well Name</i>	<i>Source ID#</i>	<i>Zone I (in feet)</i>	<i>IWPA (in feet)</i>	<i>Source Susceptibility</i>
Well 1	1024002-01G	300	880	Moderate
Well 2	1024002-02G	280	754	Moderate
Well 3	1024002-03G	303	904	Moderate
Well 4	1024002-04G	225	552	Moderate

Introduction

We are all concerned about the quality of the water we drink. Many potential contaminant sources, including septic systems, road salt and improperly disposed of hazardous materials may threaten the quality of water from drinking water wells. Citizens and local officials can work together to better protect drinking water sources.

Purpose of this report:

This report is a planning tool to support local and state efforts to improve water supply protection. By identifying land uses within water supply protection areas that may be potential contaminant sources, the assessment helps focus protection efforts on appropriate best management practices (BMPs) and drinking water source protection measures. Department of Environmental Protection (DEP) staff are available to provide information about funding and other resources that may be available to your community.

This report includes:

1. Description of the Water System
2. Discussion of Land Uses within Protection Areas
3. Recommendations for Protection
4. Attachments, including a Map of the Protection Areas

1. Description of the Water System

The Pine Valley Plantation is a retirement community, mobile home park. The park is a 150-acre facility, currently with 385 prefabricated homes and a total population of approximately 770 residents and staff. The facility has recently connected all of the homes to the Town sewer system. The facility has four supply wells that are all located within relatively close proximity to each other in the northeast section of the property. The Zone I protective radii for Wells 1 through 4 are as follows: Well #1 (01G), 300 feet; Well #2 (02G), 280 feet; Well #3, 303 feet; Well #4, 225 feet. The Interim Wellhead Protection Area (IWPA) radii for wells 1 through 4 are: Well #1 (01G), 880 feet; Well #2 (02G), 754 feet; Well #3, 904 feet; Well #4, 552 feet. The protective radii

What is a Protection Area?

A well's water supply protection area is the land around the well where protection activities should be focused. Each well has a Zone I protective radius and an Interim Wellhead Protection Area (IWPA).

- **The Zone I** is the area that should be owned or controlled by the water supplier and limited to water supply activities.

- **The IWPA** is the larger area that is likely to contribute water to the well.

In many instances the IWPA does not include the entire land area that could contribute water to the well. Therefore, the well may be susceptible to contamination from activities outside of the IWPA that are not identified in this report.

What is Susceptibility?

Susceptibility is a measure of a well's potential to become contaminated due to land uses and activities within the Zone I and Interim Wellhead Protection Area (IWPA).

were based on metered usage for the two highest months on record for each well. Please refer to the attached map that shows the Zone I and IWPA radii. The Zone I is the area immediately around the wellhead while the IWPA is a larger area that likely contributes water to the wellhead. The IWPA is only an interim protection area; the actual area of contribution to the wells may be larger or smaller.

Wells #1 through #4 are all 8-inch diameter wells drilled into the bedrock aquifer. Wells #1 and #2 were drilled in 1971 while wells #3 and #4 were drilled in 1977. Well #1 is located approximately 100 feet northwest of the motor control building and drilled to a depth of 140 feet below grade. Well #2 is located 85 feet west of the building and drilled to a depth of 225 feet. Well #3 is located approximately 200 feet southeast of the building and is drilled to a depth of 440 feet with 57 feet of casing set into bedrock. Well #4 is located 75 feet southwest of the building and drilled to a depth of 120 feet with 47 feet of casing set into bedrock.

The wells are located within a stratified drift deposit mapped as a moderate to high yield surficial aquifer and there is no fine-grained confining unit, such as clay, mapped in this area. The bedrock is mapped as the Belchertown Complex, an intrusive quartz monzodiorite. There are no detailed records of the well construction or of the materials encountered during drilling. However, the length of casing in wells #3 and #4 indicates that the overburden is approximately 30 to 40 feet of sand and gravel. Wells drilled in these conditions are considered highly vulnerable to potential contamination from the ground surface because there is no significant hydrogeologic barrier, such as clay, to prevent surface contamination from migrating into the bedrock aquifer.

The Pine Valley Plantation Cooperative Corporation (PVPCC) well water does not require and does not have treatment at this time. For current information on monitoring results, please review the Consumer Confidence report (CCR) that is issued annually by the water supplier or refer questions to the water supply contact listed above in Table 1.

2. Discussion of Land Uses in the Protection Areas

A number of land uses and activities within the drinking water supply protection areas are potential sources of contamination. Therefore, the overall ranking of susceptibility to contamination for the wells is moderate, based on the presence of moderate threat land use or activity in the Zone I and IWPA, as seen in Tables 2 and 3.

Key Land Use Issues for the Wells include:

1. **Non-conforming activities in the Zone Is**
2. **Solid waste transfer station (facility only)**
3. **Aboveground storage tanks - ASTs**

Table 2: Table of Activities Common to the Protection Areas

Potential Contaminant Sources	Zone I	IWPA	Threat	Comments
Dumpster, recycle station, other storage	Well 1	All Well	Moderate	Accidents and illegally disposed of hazardous materials pose a potential threat
Parking lots and driveways	No	All Wells	Moderate	Limit road salt usage and provide drainage away from wells
Internal transportation corridor	No	All Wells	Moderate	Road salt, spills and runoff
Sewage pipelines/pump station	No	All Wells	Moderate	Gravity and pressure mains
ASTs (home heating kerosene)	Well 1	All Wells	Moderate	Kerosene

* -For more information on Contaminants of Concern associated with individual facility types and land uses please see the SWAP Draft Land Use / Associated Contaminants Matrix on DEP's website - www.state.ma.us/dep/brp/dws/.

Table 2: Table of Activities Common to the Protection Areas (Continued)

Potential Contaminant Sources	Zone I	IWPA	Threat	Comments
Trailers, lawns and residential parking	Well 1	All Wells	Moderate	Household hazardous materials, pesticides and herbicides
Storm drains	No	All Wells	Low	Road salt, spills and runoff

* -For more information on Contaminants of Concern associated with individual facility types and land uses please see the SWAP Draft Land Use / Associated Contaminants Matrix on DEP's website - www.state.ma.us/dep/brp/dws/.

1. Non-conforming activities in the Zone Is – The Zone I for Well #1 is nonconforming with respect to MA DEP land use restrictions, which allow only water supply related activities in Zone Is. The Zone I for Well 1 contains a trailer and the facility solid waste transfer station, trash dumpster. Please note that systems not meeting DEP Zone I requirements must receive DEP approval and address Zone I issues prior to increasing water use, modifying systems or conducting any activities within Zone I.

Recommendation:

- ✓ Do not conduct any additional activities within the Zone I and continue your commendable and diligent monitoring of activities within Zone I, use of BMPs and training for emergency response. Contact MA DEP prior to conducting any activities within Zone I.

2. Facility Transfer station and storage - The solid waste transfer station and facility storage is within the Zone I of Well #1. Improper disposal of household hazardous waste in the trash poses a potential threat if a release from the dumpster occurs.

Recommendations:

- ✓ Relocate the dumpster and storage facilities outside of the Zone I. If it is not possible to relocate the dumpster, protect the area with containment such as a concrete pad and monitor the waste stream.
- ✓ Prepare an emergency response plan for responding to an accidental release.
- ✓ Conduct household hazardous waste collection.

3. Aboveground Storage Tanks – All of the homes have aboveground kerosene storage tanks. The facility has a policy requiring all tanks 15 years of age or older to be replaced or have secondary containment. All tanks must be painted.

Recommendations:

- ✓ Continue the current policy and monitor for leaks and spills during delivery.

Other activities noted within the protection areas of the wells are residential development including the PVPCC and an abutting residential neighborhood. Normal residential activities pose minimal threat to the water quality of the public water supply as well as their own private supply provided homeowners are aware of the potential hazards of household waste, lawn care chemicals, animal waste and septic systems and they utilize best management practices. Provide information to residents about the potential hazards of household chemicals, lawn care chemicals and fertilizers. Include information on Best Management Practices (BMPs) for the use of fertilizer lawn care, pesticides, household hazardous waste and septic system maintenance and disposal practices.

Stormwater discharge is located within the Zone I and IWPA of the wells. The PVPCC should use BMPs and include periodic cleaning of catch basins and street sweeping. Street sweepings and catch basin cleanings are considered solid waste and should be handled as described in the DEP's policy. Coordinate with the Town to manage these wastes. Work with the DEP, State highway and local officials regarding protecting the water supplies through emergency response coordination, especially with respect to spills and accidental releases that may be discharged through storm drains.

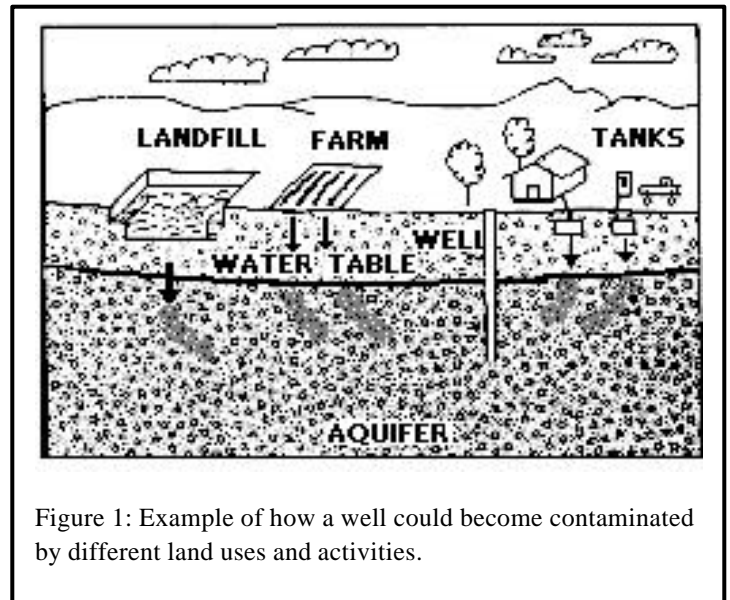


Figure 1: Example of how a well could become contaminated by different land uses and activities.

Glossary

Zone I: The area closest to a well; a 100 to 400 foot radius proportional to the well's pumping rate. To determine your Zone I radius, refer to the attached map.

IWPA: A 400-foot to ½ mile radius around a public water supply well proportional to its pumping rate; the area DEP recommends for protection in the absence of a defined Zone I I. To determine IWPA radius, refer to the attached map.

Zone II: The primary recharge area defined by a hydrogeologic study.

Aquifer: An underground water-bearing layer of permeable material that will yield water in a usable quantity to a well.

Hydrogeologic Barrier: An underground layer of impermeable material that resists penetration by water.

Recharge Area: The surface area that contributes water to a well.

For More Information:

Contact Catherine Skiba in DEP's Springfield Office at (413) 755-2119 for more information and for assistance in improving current protection measures.

More information relating to drinking water and source protection is available on DEP's web site at:
www.state.ma.us/dep/brp/dws.

3. Protection Recommendations

To reduce the system's susceptibility to contamination, the Pine Valley Plantation Cooperative Corporation should review and adopt the following recommendations:

Priority Recommendation:

- ✓ Relocate the dumpster and storage facilities outside of the Zone I. If it is not possible to relocate the dumpster, protect the area with containment such as a concrete pad and monitor the waste stream.

Zone I and IWPA:

- ✓ Keep all new non-water supply activities out of the Zone I.
- ✓ Please note that water systems not meeting DEP Zone I requirements must get DEP approval and address Zone I issues prior to increasing water use, modifying their system or conducting any additional non-conforming activities in Zone I.
- ✓ Consider well relocation if Zone I threats cannot be mitigated.
- ✓ Prohibit public access to the well and pump house by locking facilities, gating roads, and posting signs. Check the integrity of the well caps regularly and replace as necessary.
- ✓ Conduct regular inspections of the Zone I. Look for illegal dumping, evidence of vandalism, check any aboveground tanks for leaks, etc.
- ✓ Consider alternative sites for a new well and protect that land for future use through purchase or conservation restriction that would prohibit potentially threatening activities.
- ✓ Work with the DEP, State highway and local officials regarding protecting the water supplies through emergency response coordination.
- ✓ Be sure that the town is aware that your facility is a public water supply so that you can be notified of any accidents or threats from accidents.

Training and Education:

- ✓ Continue staff training on proper hazardous material use, disposal, emergency response, and best management practices; include custodial staff, certified operator, and other appropriate staff.
- ✓ Maintain the drinking water protection area signs at key visibility locations.

Facilities Management:

- ✓ Implement standard operating procedures regarding proper storage, use and disposal of hazardous materials. To learn more, see the hazardous materials guidance manual at www.state.ma.us/dep/bwp/dhm/dhmpubs.html.
- ✓ Monitor all oil/hazardous material storage tanks to incorporate proper containment and safety practices.
- ✓ Implement Best Management Practices (BMPs) for the use of pesticides on facility property.
- ✓ For utility transformers that may contain PCBs, contact the utility to determine if PCBs have been replaced. Especially the transformers in Zone I. If PCBs are present, urge their immediate replacement. Keep the area near the transformer free of tree limbs that could endanger the transformer in a storm.

Planning:

- ✓ Work with local officials in town to include the facility IWPA in the Aquifer Protection District Bylaws and to assist you in improving protection.
- ✓ Have a plan to address short-term water shortages and long-term water demands. Keep the phone number of a bottled water company readily available.

Additional Documents:

To help with source protection efforts, more information is available by request or online at www.state.ma.us/dep/brp/dws including:

1. Water Supply Protection Guidance Materials such as model regulations, Best Management Practice information, and general water supply protection information.
2. MA DEP SWAP Strategy
3. Land Use Pollution Potential Matrix
4. Draft Land/Associated Contaminants Matrix

Copies of this assessment will be provided to the public water supplier, town boards, and the local media.

- ✓ Supplement the SWAP assessment with additional local information and incorporate it into water supply educational efforts. Use a potential contaminant threat inventory to assist in setting priorities, focusing inspections, and creating educational activities.

These recommendations are only part of your ongoing local drinking water source protection. Citizens and community officials should use this SWAP report to spur discussion of local drinking water protection measures.

4. Attachments

- Maps of the Public Water Supply (PWS) Protection Areas
- Recommended Source Protection Measures Fact Sheet
- Developing a Local Wellhead Protection Plan
- Pesticide Use Fact Sheet
- Fertilizer Use Fact Sheet

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